



Center for Predictive
Computational Phenotyping

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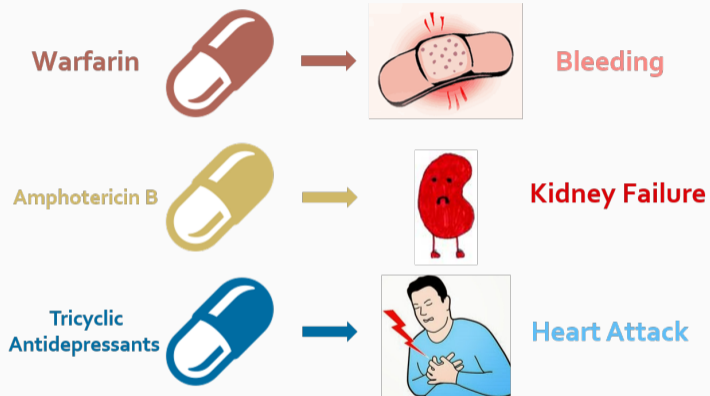
Hawkes Process Modeling of Adverse Drug Reactions with Longitudinal Observational Data

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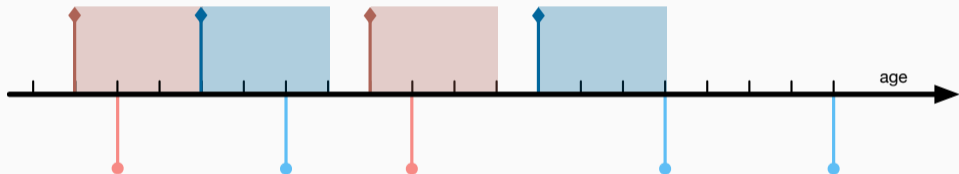


Adverse Drug Reactions (ADRs)



ADRs lead to high healthcare costs

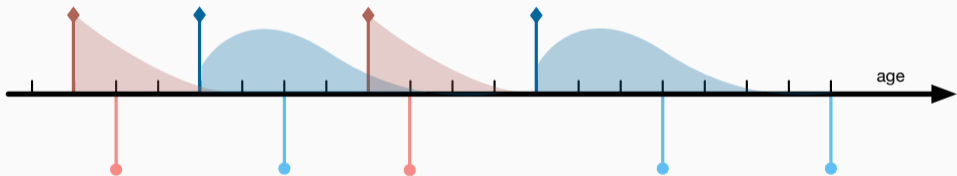
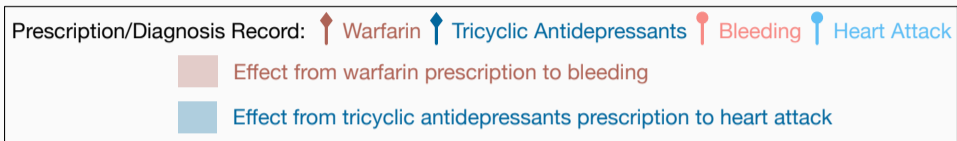
Multiple Self-Controlled Case Series



Heuristic-based drug exposure window

Time-invariant drug effect

Hawkes Process



Direct modeling of the records

Different time-varying effect for each drug-outcome pair

Results



Marshfield Clinic EHRs	Values
# patients	327,824
# adverse outcomes	1,940,681
# drug prescriptions	11,211,769

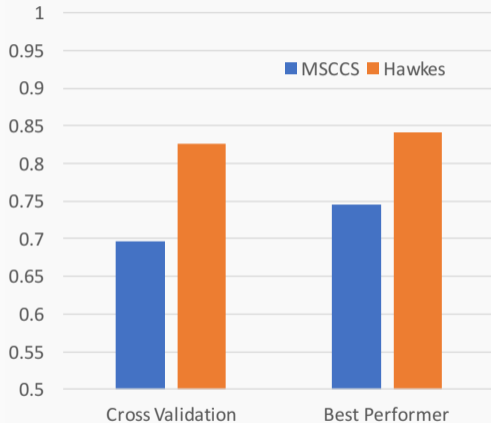


Figure: AUC for MSCCS and Hawkes

Thank You!

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